

Au and SnO₂–Au hybrid nanoparticles obtained by Au(III) reduction with Sn(II) and NaBH₄ simultaneously

H. M. Maltanova, T. N. Vorobyova

Belarusian State University, Minsk, Belarus, e-mail: vivian88.88@mail.ru

SnO₂–Au nanocomposite particles can be applied as effective non-platinum electrocatalysts [1]. It enables to save the costly metal without the loss of catalytic activity [2]. Sols consisting of SnO₂–Au and Au nanoparticles were synthesized by Au(III) chemical reduction with Sn(II) and NaBH₄ simultaneously at the presence of EDTA, sodium citrate or PVP used as stabilizers at equimolar Au : Sn ratio. Figure illustrates the presence of two types of nanoparticles that are admittedly Au (6 nm in size) and SnO₂–Au (50 nm in diameter). Gold content in sols depends on the type of stabilizer. Maximal Au content (~53 wh.% according to EDX data) was obtained in the presence of EDTA.

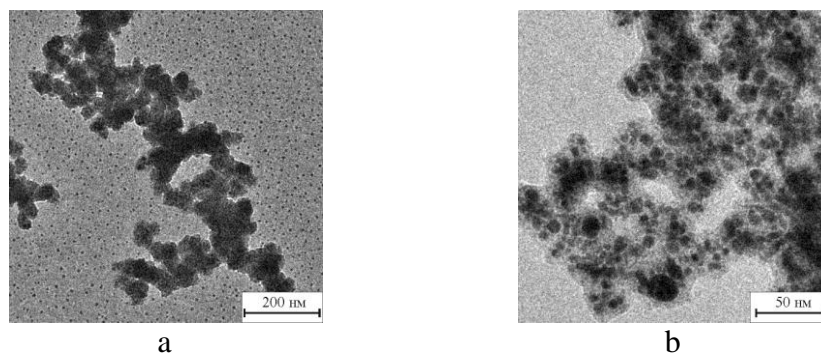


Figure 1. TEM image of Au and SnO₂–Au nanoparticles

References

1. W. Chen, D. Ny, S. Chen. *J. Power Sources*. **195** (2010) 412.
2. A. Vaskelis, R. Tarozaite, A. Jagminiene, L. Tamasiunaite. *Electrochimica Acta*. **53** (2007) 407.